GRANADA
Learning

INTERACTIVE CD-ROM

WINDOWS VERSION

RECOMMENDED FOR NATIONAL CURRICULUM
KEY STAGE 3/4
GCSE & SCOTLAND
5-14 LEVEL D,E
& STANDARD GRADE

INVESTIGATING FORCES & MOTION

Introduction

The Forces and Motion CD-ROM is designed to support the teaching of Physics at Key Stage 4 of the Science National Curriculum for England and Wales. It includes extension materials covering topics such as momentum, the equations of uniformly accelerated motion and circular motion, that are required by various examination boards at GCSE.

Many Physics teachers introduce these concepts through discussion of the work done by the movement of a force, as part of an introductory course on dynamics. Examination questions which test knowledge of Newtonian mechanics may also test understanding of mechanical energy concepts. For these reasons a section on work, energy and power has been included on the disc.

Included in the Support Materials are worksheets that require the use of the CD-ROM. These may be printed out and used as copy masters. Each contains guidance on the use of the CD-ROM and can be used by students working independently.

Equipment requirements

PC version

486 DX4/100 IBM Compatible PC

8 Mb RAM

256 colour graphics 640 x 480

MS.DOS 5.0 or above

Windows 3.1 or Windows '95

Double speed CD-ROM drive

Mouse

Sound card

Printer

Installing the CD-ROM for 3.1, 3.11 and Windows 95

1. Start Windows.

2. Place the CD-ROM into your CD-ROM drive. Depending on the type of drive, you may need to put the disc into a caddy before proceeding .

3. If you have Windows 95 after a few moments the CD-ROM will load automatically. Follow the instructions on screen to install or run.

4. For 3.1 and 3.11 select 'Run...' from the File Menu in Program Manager and type the following:
<drive>:\setup
Where <drive> is the drive letter of your CD-ROM drive.
For example, if your CD-ROM drive is set up as 'D' you would type the following;
d:\setup
Press enter or click on OK to run the Set-up program.

5. Follow the instructions given in the Set-up program. This will install the software and create a program group in Program Manager. Parts of the software can be installed on your hard disk. This makes it quicker to load than loading from the CD-ROM. The performance may also be improved.

6. For Windows 3.1x users install Video for Windows (version 1.1e) on to your system. If this has already been done, you can skip this step. If you are not sure if you already have video for Windows, you can reinstall it without any adverse effects.
Select 'Run...' from the File Menu in Program Manager and type the following;
<drive>:\video\setup
Where <drive> is the drive letter of your CD-ROM drive.
This will be the same as the drive letter you entered in step 3. For example, if your CD-ROM drive is setup as drive 'D', you would type the following;
d:\video\setup
Press Enter or click on OK. The video Set-up program will now run.

7. Once the installation is complete, exit from Windows and reboot your system.

Running the CD-ROM under Windows 3.1 and 3.11

1. Start Windows.
2. Place the Forces & Motion CD-ROM into the CD-ROM drive.
3. Select the Forces & Motion icon in the Program Manager and double click on this to run the program.

Windows and Video for Windows are trademarks of Microsoft Corporation.

Helpline

If you have any problems using the software please phone the YITM Customer Services Helpline on:- 0161 627 0519. For hardware consult the manufacturer's handbook or refer to your dealer.

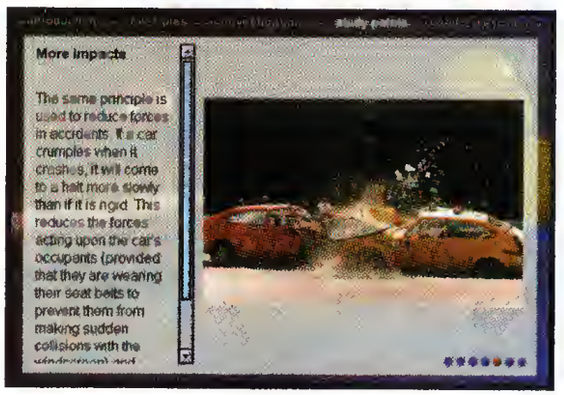
Getting Started

On running the CD-ROM for the first time, you will see a 'Welcome' animation. This ends with the Main Menu screen. Choose a topic from the list down the left-hand side and click on it.

A good example to start explaining the disc is the topic 'Momentum'. Click on this topic and a list of the 5 sections to study will appear along the top of the screen.

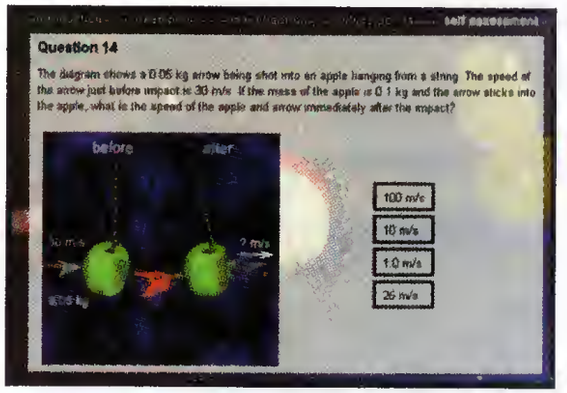
Click on 'Introduction'. You will now see and hear an introduction to the topic of Momentum. You can click the dots along the bottom edge to move forward or backwards during the commentary.

Now click on 'Study Points' to see a summary of the main points to study. By clicking on the small dots you can move through the screens. The Glossary and context sensitive Help feature will aid your understanding of the concepts. You can jump to any pointon the CD-ROM using the Index. The Key Points list will take you to Study Points relevant to the screen you are currently viewing.



'Examples' provide you with some types of questions you might be asked on this topic in an examination. Some questions are worked through for you, but others are interactive. With these you have to complete the questions before receiving feedback. Follow the instructions on the screen to work through this section.

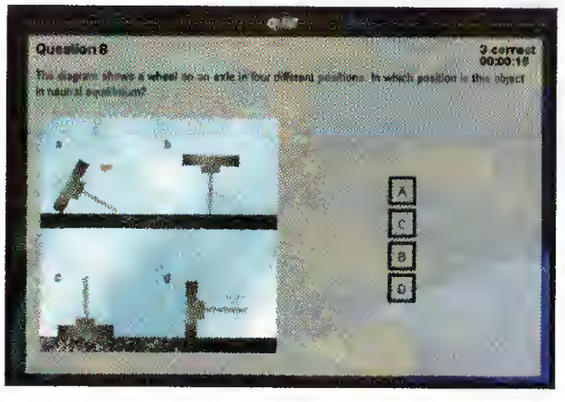
Click on 'Self Assessment' to access a series of multiple-choice questions on the Momentum topic.



Finally, each topic has an interactive Investigation. On the Momentum topic, you have to type in values of force and mass to try and make two masses roll along at the same speed.

Return to the Main Menu by clicking the 'Main Menu' button in the bottom-left corner.

The final feature on the disc is the Quiz. Accessed from the Main Menu; this presents a series of multiple-choice questions which can be answered against the clock.



Contents of the CD-ROM

Forces and motion presents the student with twelve study topics:

Measuring motion	Momentum
Motion and graphs	Friction and air resistance
Equations of motion	Equilibrium
Newton's Laws	Motion in a circle
Gravity	Forces and materials
Work, energy, and power	Pressure

The individual topics can be accessed from the main menu screen. Each topic contains five main sections. The sections are selected by clicking the 'tabs' at the top of the screen.

The on disc **Introduction** sets the scene for the student, with photographs and videos showing both familiar, and more unusual, examples of motion, forces and their effects. These audio visual presentations review concepts introduced at Key Stage 3, and could be used with younger students meeting the material for the first time.

The **Study Points** develop and summarise all the ideas, information and equations needed to understand a topic and to solve typical examination problems.

The **Investigation** provides the opportunity to experiment with a model situation in which the principles introduced in the topic are applied. Students can plan their investigations, adjust variables, record data, plot graphs and interpret their results, and so develop their understanding of the underlying Physics. Work sheets are provided for each of the investigations later in this document.

The **Worked Examples** demonstrate how the basic ideas and equations are applied to answer examination style questions and to solve quantitative problems. Some of the examples have an interactive element which students must complete before they are given feedback.

Self Assessment allows students to monitor their own progress through answering examination style multiple choice questions. Feedback is provided to give appropriate help if an incorrect answer is given.

A variety of study tools are available to the students as they work on the disc. A comprehensive **index** locates all the information available on the disc. A detailed **glossary** gives definitions of all the important terms. **Key points** provide relevant cross-links between information in different sections and topics. An **equation list** presents important equations of motion introduced in the investigates.

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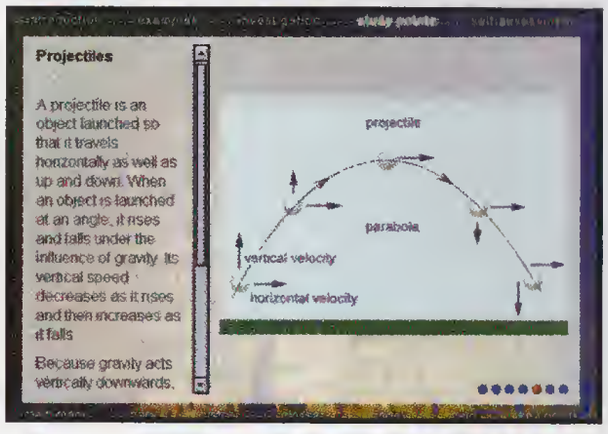
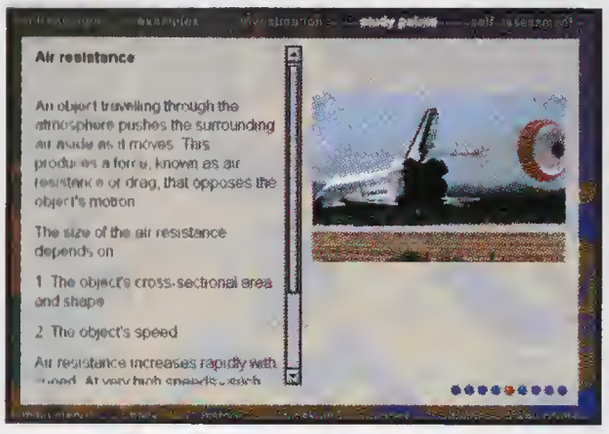
Motion in a circle	**Forces and materials**	**Pressure**





Please read carefully the instructions inside the booklet on how to install this CD-ROM

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